# **City of Flagstaff**

**Municipal Emissions Report** 

WASTE – BUILDINGS – FLEET – AIRPORT – STREETLIGHTS – EMPLOYEE COMMUTE – WATER











# **Municipal Emissions Report**

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### **Water Production and Delivery**

In 2012, the City produced 8,438 Acre Feet of potable water and 4,218 Acre Feet of reclaimed water. 79 percent of potable water produced came from groundwater supplies while the remaining 21 percent came from surface water. Emissions from the electricity and natural gas used during water production and delivery operations contributed 25 percent of overall emissions. In Fiscal Year 2011, 56 percent of the City's potable water came from surface water supplies. This caused a 25% increase in electricity use due to the energy intensiveness involved in pumping groundwater rather than surface water.

Annual Electricity Use: 20,464,382 kilowatt hours (kWh)

Annual Electricity Costs: \$1,788,977

Annual Natural Gas Use: 13,708 therms

Annual Natural Gas Costs: \$16,307

Energy Cost per Million Gallons: \$657

Total Emissions: 13,556 CO2e

The greatest impact on how the City operates its water supply system is determined by the winter weather season which typically ends in March or April. There is a substantial difference on how the City provides water depending upon whether it is a "wet" or "dry" year. A "wet year" is classified as a year when Upper Lake Mary reaches 65 percent or more of capacity. Above the 65 percent level, the City can utilize this resource to its maximum. During 2012, the City conducted dry-year operations, which required the groundwater wells to be used as the primary source with Upper Lake Mary water supplementing demand.

The Inner Basin did not to provide any water in 2012 due to the break in the pipeline as a result of the 2010 Schultz Fire.

In 2012, the City spent \$2.75 million in electricity and natural gas costs to produce, treat and deliver water.

#### **Wastewater Treatment**

Last year the City treated 5,768 Acre Feet of wastewater of which 2,082 Acre Feet was directly delivered to reclaimed water customers. The remaining treated wastewater was discharged into the Rio de Flag to meet contractual obligations. Emissions from wastewater treatment operations contributed 11 percent of overall emissions.

Annual Electricity Use: 7,647,177 kWh

Annual Electricity Costs: \$755,929

Annual Natural Gas Use: 155,935 therms

Annual Natural Gas Costs: \$185,992

Total Emissions: 5,950 CO2e

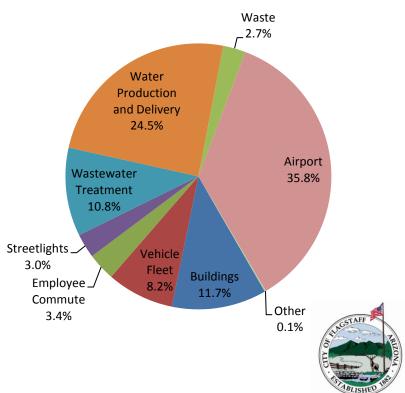


## **Summary**

In support of the Municipal Sustainability Plan, the City of Flagstaff reports annual emissions for the following municipal sectors: water production and delivery, wastewater treatment, airport, buildings and parks, fleet, employee commute, waste, streetlights and other operations. The reporting period spans the City's fiscal year from July 1, 2011 – June 30, 2012. The report relies on the best available data and source specific calculation methodologies. City of Flagstaff reporting follows the standards outlined in the International Local Government Greenhouse Gas Emissions Analysis Protocol.

In Fiscal Year 2012, the City of Flagstaff's municipal operations emitted 55,271 metric tons of Carbon Dioxide equivalent (CO2e) emissions into the atmosphere. This is an 11 percent increase from Fiscal Year 2011. Emissions from the airport and water production and delivery sectors significantly increased while emissions from waste slightly increased. Emissions from all remaining sectors decreased from the prior year.

# City of Flagstaff Emissions Fiscal Year 2012





### **Renewable Energy**

In March 2011, the City awarded a 20 year Power Purchase Agreement (PPA) contract to develop multiple photovoltaic (PV) systems on City property. A PPA is a financial arrangement in which a third-party developer owns, operates, and maintains the PV system, and a host customer agrees to site the system on its property and purchase the system's electric output. The PPA model leverages available Federal tax credits, renewable energy credits and utility incentives.

A strategic focus was placed on the City's highest energy users. To date three PV systems have received utility incentives and are under construction. They include: Aquaplex, City Hall parking lot, and Wildcat Wastewater Treatment Facility.

Additional electric consumption was offset through the purchase of 4,500 blocks of renewable energy through the City's electric utility provider's, Arizona Public Service, Green Choice Program. This is equivalent to 450,000 kilowatt hours (kWh).



# **Municipal Emissions Report**

### **Airport**

Emissions from aviation operations and traffic in and out of the Flagstaff Pulliam Airport contributed 36 percent of overall emissions in 2012. Emissions in this sector include fuel used during commercial flight take-offs and landing as well as electricity and natural gas use at airport facilities. Based on air traffic control records, an estimated 31,773 non-commercial flights and 12,519 commercial flights had either landed at or departed from Flagstaff Pulliam Airport. This is a 25 percent increase in flight operations from the previous year.

Annual Electricity Use: 829,917 kWh

Annual Electricity Costs: \$119,109

Annual Natural Gas Use: 30,016 therms

Annual Natural Gas Costs: \$31,167

Total Emissions: 19,775 CO2e

### **Buildings and Parks**

In 2012, the City operated and/or maintained 94 facilities and 23 parks throughout the community. Energy used (electricity and natural gas) to heat, cool, power and light municipal buildings and parks accounted for 12 percent of 2012 emissions. Broken down by energy source, emissions from electricity consumption contributed 75 percent of the overall emissions. The remaining 25 percent of emissions are from the combustion of natural gas.

Annual Electricity Use: 7,241,132 kWh

Annual Electricity Costs: \$924,258

Annual Natural Gas Use: 275,589 therms

Annual Natural Gas Costs: \$293,743

Total Emissions: 6,834 CO2e



### **CITY OF FLAGSTAFF**







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